BARON SIR FERDINAND VON MUELLER.

NEWS of the death of this distinguished botanist and geographer reached London on the 10th inst., causing some surprise, as it was not known here that his health was failing. Born at Rostock in 1825, and educated at Kiel, he emigrated to Australia in 1847, in consequence of hereditary symptoms of phthisis; having previously lost his parents. Mueller belonged to the school of botanists, now fast diminishing in numbers, who began their studies in the field instead of in the laboratory. Before leaving Europe, he devoted much time between 1840 and 1847 to the investigation of the flora of Schleswig-Holstein. On his arrival in Australia, he took service as a druggist's assistant in Adelaide—a post he seems to have held for a brief period, as he was soon engaged in exploring South Australia. From 1848 to 1852 he travelled at his own expense. At this date he was appointed, by Governor La Trobe, to the newly-created post of Government botanist, and soon visited the previously unexplored Australian Alps. About this period he entered into correspondence with the late Sir William Hooker, which led to the publication of the results of his earlier journeys in Hooker's *Kew Journal of Botany*, beginning with the fifth volume. In 1854 the Victorian Institute was founded[1]—the first institution of its kind, I believe, in Australia proper, though Tasmania had its Royal Society some three years earlier; and Mueller was one of the first and most prolific contributors to its *Transactions*. It was here that he published the new plants collected in the Australian Alps.

In 1855-56 Mueller was attached as botanist to Gregory's expedition across North Australia, from the Victoria River to the Albert River. In 1857 he was appointed Director of the Melbourne Botanic Garden; but in 1873 he was superseded, owing to his too rigidly scientific management, though he still retained charge of the herbarium and library. Great as were his exertions and his enthusiasm on the introduction and cultivation of useful and ornamental plants, he failed from a practical standpoint. His work on "Select Extra-tropical Plants eligible for Industrial Culture," &c., was an extraordinary success; yet not on account of its practical value, for it has none, but as a work of general reference it is very useful. Nine editions have appeared, including an American, a French, and a German edition.

During the forty-nine years of his Australian life, Mueller was such an unceasing and copious writer, that it is impossible to do more than glance at some of his more important publications. It was from the first his ambition to write a "Flora" of the entire country, and his almost innumerable papers were written with that view; but when it came to the point, the task, for various reasons, was confided to the late George Bentham, and Mueller most cordially co-operated with him by sending his collections and notes to Kew. Of that I can speak with some authority, having acted a very humble, though congenial, part in connection with the earlier volumes of the classical "Flora Australiensis." Mueller, however, found enough to do in publishing the thousands of novelties collected by himself, and by others under his direction. His "Fragmenta Phytographiæ Australiæ" is the chief, but by no means the sole repertorium of his descriptions. Prominent among his more utilitarian works are the illustrated monographs of the genera *Eucalyptus* and *Acacia*. His "Census of Australian Plants," so carefully compiled with regard to dates, references and authorities, is exceedingly useful for purposes of comparison with the floras of other countries, and has been extensively used by the writer and others. But Mueller was much more than a botanist and geographer; he was always a promoter, and often the originator, of movements for the scientific, social, and material welfare of the country he had made his home. He was in turn President of the Philosophical Institute, of the Geographical Society (Victorian branch), of the Australian Association for the Advancement of Science, and various other bodies and societies. He has also the reputation of having been a most devout and philanthropical person. And, in spite of his not being a practical horticulturist, he did more probably than any other person to promote the commercial—that is to say, the useful—development of cultural industries in Australia, and more than any other person in the diffusion of useful Australian plants in other parts of the world. He had probably a wider correspondence than any living botanist, and few are the establishments that have not been in some way benefited by him. The value of his work consists largely in the fact that he did exactly the kind of work that was required in a young country for its material as well as its moral development. It is true that his work exhibits more industry than genius; but, after all, what he undertook gave little scope for the latter quality. There was, however, a weak side in his character, which it would be affectation to pass over entirely, though one would say as little about it as possible. He had an inordinate craving for titles, distinctions, and admiration. This led him to publish, in all sorts of places and languages, what it would have been much better to have kept together, and to indulge in vagaries in botanical nomenclature which are simply deplorable and damaging to his character as a sincere servant of science. Nevertheless, the country to which he devoted nearly half a century of active life was proud of him, and justly so, and willingly honoured him during his lifetime, and will doubtless long cherish his memory

W. BOTTING HEMSLEY.

NOTES.

OUR American contemporary, *Science*, suggests the formation of an International Association for the Advancement of Science, recent events having shown that members of the various national Associations regard co-operation in a cordial manner. The British Association meets in Toronto next year, and the American Association, after meeting at Detroit, on the Canadian frontier, will adjourn to Toronto to welcome our Association to the American continent. Another instance of community of feeling is afforded by the decision of the British Association to meet at Dover in 1899, in order to promote an interchange of visits between its members and those of the French Association, which will meet at Boulogne in the same year. These signs of fellowship indicate that the time has come when an international congress for the advancement of science may be profitably considered. Among the many subjects which would benefit by international co-operation are bibliography, nomenclature, definition of units, exploration, and science teaching. The amalgamation would also impress the collective weight of science upon the outside world, and would thus be able to claim a more adequate support and recognition of scientific progress. The proposal of our contemporary is that the first meeting of an international congress of this character should take place in Paris in the first year of the twentieth century. In considering the question of the amalgamation of Associations for the Advancement of Science, it must be remembered that great international congresses are often too unwieldy to be satisfactorily managed, and that the confusion of tongues at such gatherings is a constant factor working against success.

SCIENCE has just lost two of its foremost workers. We refer to Dr. Henry Trimen, F.R.S., late Director of the Royal Botanic Gardens, Ceylon, who died at Peradeniya on Sunday last, in his fifty-third year; and M. Tisserand, the distinguished Director of the Paris Observatory, who died on Tuesday.

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[1] Subsequently the Philosophical Institute, and then the Royal Society.

The Academy of Natural Sciences of Philadelphia has conferred the Hayden Memorial Geological Award for 1896 on Prof. Giovanni Capellini, of the University of Bologna.

A slight earthquake occurred on the 16th inst. in North-west Italy. A small shock was felt at several places in Southern Piedmont and in Liguria, but no damages have been reported. The disturbance was observed by Prof. Guido Cora in Costigliole d'Asti, and he informs us that the shock took place at 7.18 a.m.; it was undulatory, in the direction from north to south, and lasted only a few seconds.

Mr. William Whitaker, F.R.S., who joined the Geological Survey of Great Britain in 1857, has just resigned his post on the staff. For many years he has acted as District Surveyor in superintending the survey of the southern counties of England. The loss of his experienced services will be much felt by his colleagues, to say nothing of the loss of an ever-cheery companion. We trust he may long live to labour in the cause of geology.

The Paris correspondent of the *Times* reports the occurrence of a serious explosion, on Saturday last, in a building where for two months M. Raoul Pictet, the distinguished chemist, has been manufacturing acetylene. One of the steel tubes, 3 feet long, used for storing the new gas, exploded. Such was the violence of the explosion that the building was blown up, and the windows of all the neighbouring houses were shattered. It has been ascertained from the fragments that the tube which burst, and which was practically full, was returned from Brussels on the 13th inst. along with seventy-four empty ones. The exact cause of the explosion is at present unknown.

We regret to see announcements of the deaths of Dr. David Garber, Professor of Mathematics and Astronomy in Muhlenburg College, Allentown, Pa.; Dr. Theodor Margo, Professor of Comparative Anatomy and Zoology in the University of Budapest; Dr. Rochard, formerly President of the Paris Academy of Medicine; Dr. W. H. Ross, formerly Professor of Anatomy in the Mobile Medical College, Alabama; Dr Callender, Professor of Neurology in the Vanderbilt University, Nashville.

The following gentlemen have been nominated by the Council of the London Mathematical Society for election as the Council and officers for the ensuing session:—President, Prof. Elliott, F.R.S.; Vice-Presidents, Major Macmahon, R.A., F.R.S., M. Jenkins, and Dr. Hobson, F.R.S.; Treasurer, Dr. J. Larmor, F.R.S.; Secretaries, R. Tucker and A. E. H. Love, F.R.S.; other members, Lieut.-Colonel Cunningham, R.E., H. T. Gerrans, Dr. Glaisher, F.R.S., Prof. Greenhill, F.R.S., Prof. Hill, F.R.S., Prof. Hudson, A. B. Kempe, F.R.S., F. S. Macaulay, and D. B. Mair. At the annual general meeting of the Society, which will be held on November 12, Major Macmahon will take as the subject of his valedictory address, "The Combinatory Analysis." On the same evening the De Morgan medal will be presented to S. Roberts, F.R.S., who will be the fifth recipient of the medal.

Conjointly with the Leigh Browne Trust, the Humanitarian League has arranged a series of five "Humane Science Lectures," to be given at St. Martin's Hall, Trafalgar Square, W.C. The programme is as follows: October 27, "The Need of a Rational and Humane Science," by E. Carpenter; November 17, "Natural Selection and Mutual Aid," by P. Kropotkin; December 8, "The Humane Study of Natural History," by J. Arthur Thomson; January 19, "The Treatment of Criminals," by Rev. Douglas Morrison; February 9, "Suggestion: its place in Medicine and Research," by Dr. Milne Bramwell. The general title, under which the lectures are grouped, is explained in the following extract from the prospectus. "The various departments of science are ever growing rapidly in extent, so rapidly that their correlation tends to fall behind, and in some directions to be overlooked; yet this correlation is not only an end, but a means of scientific progress. The objects, methods, and results of each department should tend to the advance of science as a whole, physical and mental, and only when thus directed will they conduce to permanent human welfare. An uncorrelated department of science tends to lose either life or balance. To illustrate this, and to show methods of research which do not violate the essential unity of nature, and the excellent result to be obtained by such methods, is one of the aims of the proposed course of lectures."

Fifty years ago last Friday, on October 16, 1846, the first surgical operation under the influence of ether was performed in the Massachusetts General Hospital, Boston, by Dr. John C. Warren, the anæsthetic being administered by Dr. W. T. G. Morton, who had already proved its anæsthetic properties in tooth extraction. In commemoration of the introduction of this blessed relief to suffering humanity, the current number of the *British Medical Journal* contains a very interesting account of the circumstances attending the discovery and use of ether as an anæsthetic, and of the subsequent introduction of chloroform into general use. The credit of having practically proved for the first time the possibility of abolishing sensation so entirely that a painful operation could be done without being felt, belong to Horace Wells, a young dentist of Hartford, Connecticut, who had a tooth extracted while under the influence of nitrous oxide gas on December 11, 1844. Morton followed with the use of ether in 1846, and in the next year Sir James Simpson communicated his discovery of chloroform to the Medico-Chirurgical Society of Edinburgh, in a paper entitled "Notice of a New Anæsthetic Agent as a Substitute for Sulphuric Ether," the first operation under its influence being performed on November 15, 1847. To Simpson also belongs the credit of having made anæsthesia triumph over the violent opposition with which it was assailed. In addition to a general history of anæsthetics, the *British Medical Journal* contains an account, by Dr. W. Squire, of the first operation under ether in Great Britain, and a retrospective article by Dr. Dudley W. Buxton.

Two interesting instances of birds apparently profiting by experience are related by Dr. R. Williams in the *Zoologist*. The proprietor of a certain wood, having found that the wood was a nesting stronghold of blackbirds and thrushes, made systematic raids on their nests in consequence of the damage done by the birds to his fruit. The result was that both the blackbirds and thrushes departed from their usual habit in the choice of nesting sites, and, instead of building in the thickets and small fir-trees with which the wood abounded, they built their nests upon the ground. The second case refers to the common sandpiper, which usually nests on patches of gravel thrown up by a river, and more or less covered with docks and other weeds. On one occasion when the sandpipers had built their nests and commenced to sit, the river near Dr. Williams' house overflowed its banks, and the nests were destroyed. On the subsidence of the water, the birds built again on their old sites, only to have their nests again swept away by another flood. In the next season the sandpipers neglected the eligible riparian building sites, and nested away from the river. The observations indicate that the birds remembered former calamities, and made use of their dearly-bought experience by choosing positions inaccessible to the highest flood. The birds continued to nest at some distance from the river for three seasons, after which they resumed their former nesting-places close to the water.

FROM a short article in the *Chemical News*, we learn that in the course of researches on monazite sand, M. P. Barrière appears to have come upon a new elementary body, to which he has given the name *Lucium*, and which he purposes using for the production of an incandescent gas light similar to that of Auer von Welsbach. Careful investigation has been made of the new and independent character of lucium, in order to prove that its use was not anticipated by the Welsbach patents. The examination showed that while the salts of cerium, lanthanum, and didymium form with sodium sulphate insoluble double salts, lucium does not. Thorium and zirconium form insoluble double salts with potassium sulphate; this is not the case with lucium. Yttrium, ytterbium, and erbium are not precipitable by sodium thiosulphate, whilst lucium chloride is precipitable. From glucinium lucium differs, as its salts are precipitable by oxalic acid. The lines in the spectrum of lucium are special, and only approximate slightly to those of erbium. Erbium oxide, on ignition, appears of a very pure rose-colour, and its nitrate is red. On the contrary, lucium oxide is white, slightly greyish, and its nitrate is white. The aqueous solutions of the erbium salts are red or rose-colour; those of lucium, even if containing 15 or 20 per cent. of the salt, are almost colourless. These and other reasons seem to show that lucium is a new distinct elementary body. Its atomic weight has been calculated as = 104.

THE last number of *Modern Medicine and Bacteriological Review* contains a notice of some elaborate investigations which have been carried out by Drs. Chittenden and Mendel, of the Physiological Department of Yale University, on the influence of alcoholic drinks upon the chemical processes of digestion. The report in question was prepared by request, and presented to the Committee for the investigation of the liquor problem in New York. The investigations were made by means of artificial digestive experiments, in which the digestive fluids were allowed to act upon various food substances under definite and constant conditions. Absolute alcohol in four cases appeared to actually stimulate digestive action by a fraction of 1 per cent., but the amount of alcohol present did not exceed 1 or 2 per cent. Whenever alcohol was added in quantities over 2 per cent., digestive activity was markedly checked; in one instance, 3 per cent. of alcohol reduced the digestive activity by 17·6 per cent. Pure rye whisky containing 50 to 51 per cent. of alcohol yielded practically the same results; even an addition of 1 per cent. of this spirit was found, taking the average of the experiments, to reduce digestive activity by over 6 per cent. In three cases, however, an increase in digestive activity of from 3 to 5 per cent. was recorded when additions of whisky in the proportion of from 1 to 3 per cent. were made. Brandy, rum, and gin gave practically the same results. Messrs. Chittenden and Mendel consider that their experiments, as far as they go, justify them in concluding that "whisky can be considered to impede the solvent action of the gastric juice only when taken immoderately and in intoxicating quantities."

SEVERAL successful experiments of scientific kite-flying, for the purpose of exploring the upper air, have been made during the past summer at Mr. Rotch's observatory at Blue Hill, near Boston, and the results of some of these are noticed in *Science* of October 2. The kites used are of the tailless and the box patterns, provided with registering instruments specially made by M. Richard, of Paris. The altitudes reached are determined in three ways—by theodolites, by the angle and length of the kite-line, and by the barometric pressure recorded. The height of one mile was exceeded on six occasions; on July 20, at a short distance above the earth, the kite entered a cloud in which the humidity reached saturation, while after a further ascent of about 2500 feet, the air was found to be much dryer. On August 1, the recording instrument reached an altitude of 7333 feet above sea-level. The temperature at the maximum altitude was 20° less than at the observatory (640 feet above sea-level), while the relative humidity showed variations of 30 to 80 per cent. The results obtained from these investigations at Blue Hill are attracting much attention.

IN the current number of the *Annales de Chimie et de Physique*, M. Moissan continues the account of his researches with the electric furnace. He gives the preparation and properties of titanium, molybdenum, uranium, and the borides of iron and of carbon, the preparation of manganese, and an historical account of the researches already made on the crystallised carbides of the alkaline earths. In the latter paper he lays claim to the discovery of crystallised carbide of calcium, while assigning to Mr. Wilson the credit of having introduced its manufacture in the United States. With regard to titanium, M. Moissan has found that with a current of 50 ampères and 50 volts, titanic acid is converted into crystallised oxide of titanium. With 350 ampères and 70 volts, the bronze-yellow nitride, Ti_2N_2, is obtained. When 1200 ampères and 70 volts are used, the temperature rises above the point of decomposition of this substance, and the carbide TiC, is formed, free from nitrogen; and if this is heated with an excess of titanic acid, titanium containing only 2 per cent. of carbon is obtained. These successive actions, says M. Moissan, give a decisive proof of the increase of temperature of the electric arc dependent on an increase of the current, and form the starting-point of another long series of experiments. The preparation of the crystallised compound of iron and boron containing over 15 per cent. of boron, and nearly corresponding to the formula FeB, effectually disposes of the assertion of some workers on iron that it is impossible to alloy these two elements.

THE Australian Museum, Sydney, like many other colonial museums, suffers from lack of funds to acquire specimens by purchase. In the report of the Trustees of the Museum, lost opportunities due to this deficiency are lamented. To an enthusiastic curator nothing is more heartrending than to see objects urgently needed in the collection under his charge, and to be unable to acquire them; a woman coveting a pretty bonnet which she cannot buy, may be able to understand his feelings, but no one else could adequately sympathise with him. Owing to this want of funds, it has only been possible for a few isolated purchases to be made during the year 1895. The same difficulty applies to collecting, and consequently the Trustees have been unable to continue systematic exchanges with other institutions from which they have been accustomed to receive specimens. Notwithstanding these limitations, 11,499 specimens were acquired during the year. The more important acquisitions were:—A fine collection of mounted sheep, goats, and dogs from the museum at Florence, a large native drum from the Bismarck Archipelago, and one of Captain Cook's original MS. Journals, or Log of H.M.S. *Endeavour*, which was kept by him in triplicate. It is satisfactory to know that a sum of £6000 has been voted by Parliament for the further extension of the Museum buildings. The assistance came none too soon, for an accident to the plaster revealed the astounding fact that the woodwork of the entire roof over the central part of the main building had been destroyed by white ants. The destruction was so complete that it is surprising that the portion affected did not collapse. The building had to be temporarily supported in order to make it safe until funds became available for the erection of a new roof. In spite of these little tribulations, Mr. R. Etheridge, jun., and his assistants accomplished a large amount of work during the year covered by the report. Many of the collections have been thoroughly overhauled and rearranged, while the condition of all of them appears to have been improved.

Mr. T. Whitelegge, who has charge of the marine invertebrata in the museum, has conducted a number of experiments to test the value of formol as a preservative. The results have proved highly satisfactory, more especially in regard to delicate marine organisms; they show that a 2½ per cent. solution is sufficient to preserve many delicate organisms, and that for most others a 5 per cent. solution is ample.

A LIST of books in which botanical book-hunters will be especially interested, is the "Bibliographie Botanique," just issued by Messrs. J. B. Baillière et Fils, Paris. The books and brochures in this catalogue are classified geographically.

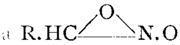
A BRIEF account of the excursion to the Isle of Man, after the recent meeting of the British Association, was given in NATURE of the 8th inst., by Prof. W. A. Herdman. It may interest some of our readers to know that a complete descriptive report of this supplementary meeting of archæologists, geologists, zoologists, and botanists, occupying no less than fourteen columns, appears in the *Isle of Man Times* of October 3.

WE have received the Report of the Botanical Survey of India for the year 1895–96, by the Director, Dr. G. King. The Botanical Surveys of Northern India and of the Bombay Presidency have been steadily progressing; while that of Southern India has been temporarily interrupted by the death of its Director, Mr. M. A. Lawson. Work has also been done in Assam and in Burma.

IN connection with this Survey, Dr. D. D. Cunningham and Mr. D. Prain have published a very interesting "Note on Indian Wheat-rusts," containing a great deal of valuable information respecting the diseases known as "rust," which attack the wheat and barley crops in different parts of India, and which appear to belong to four different species of the genus of parasitic fungi *Puccinia*, and their connection with a fungus which attacks *Launea asplenifolia*, a very common weed among cultivated crops, belonging to the Compositæ.

MESSRS. WILLIAM WESLEY AND SON have prepared and issued a new "Natural History and Scientific Book Circular" (No. 126), containing titles and prices of nearly two thousand works on the Invertebrates. The catalogue comprises descriptions of handbooks and other general works, a classified list of works on the Invertebrates from Protozoa to Mollusca, arranged according to Claus' "Text-book of Zoology;" and a section on economic entomology. This intelligent arrangement of the titles makes the catalogue a useful index to zoological literature.

THE renowned *Zeitschrift für physikalische Chemie* has now a friendly rival in the *Journal of Physical Chemistry*, edited by Profs. Wilder D. Bancroft and Joseph E. Trevor, and published at Cornell University. The first number of the new journal contains articles on "Irreversible Cells," "Chemistry and its Laws," and "Ternary Mixtures," reviews of books, and critical digests of papers bearing upon different phases of physical chemistry. The journal thus follows much the same lines as its admirable German prototype, and we anticipate that it will play a similar important part in the development of the rich domain where the realms of physics and chemistry overlap. The publication will be issued every month except July, August, and September. The London agents are Messrs. Gay and Bird.

A FRESH light has been thrown on the constitution of the nitro-paraffins by the researches of Prof. Hantzsch, of Würzburg, which are recounted in a recent number of the *Berichte*. At one time it was thought that the presence of the nitro-group in the methane molecule imparted an acid function to one of the hydrogen atoms, and that in the formation of a salt this atom was replaced by the metal, which thus became directly combined with the carbon atom, the formula of sodium nitro-methane being written $CH_2Na.NO_2$. The researches of Nef and others have, however, shown that most probably the free nitro-paraffins have a different constitution from their salts, and that in the latter the metal is not directly combined with carbon, but with oxygen. Prof. Hantzsch's discovery shows that this view is almost certainly correct. He has found that certain aromatic derivatives of the nitro-paraffins actually exist in two distinct forms, one of which, the normal compound, is an indifferent substance incapable of forming salts, and has the formula $R.CH_2.NO_2$; whilst the other, the iso-compound, has the formula  $R.HC\overset{O}{\triangle}N.OH$, and acts in all respects as an acid. When, for example, a solution of the sodium salt of bromophenylnitromethane is acidified with hydrochloric acid, the iso-compound is precipitated as a crystalline mass, which melts at 90°. When this is preserved, however, either alone or in solution, it rapidly undergoes a molecular change, and after twelve hours melts at 60°, and has all the properties of the normal compound, which can itself be directly obtained from the solution of the sodium salt by decomposition with a weak acid, such as carbonic acid. The normal compound does not react with ferric chloride, is much less soluble than its isomeride, and in aqueous solution is a non-electrolyte; whereas the iso-compound is a stronger acid than acetic acid, and gives a characteristic colouration with ferric chloride, a further proof that it contains the hydroxyl-group. The normal compound is at once converted by alkalis into the iso-derivative, which then immediately dissolves, forming the corresponding salt.

THE additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus sinicus*, ♂) from India, presented by Dr. Allen M. Cleghorn; two Tigers (*Felis tigris*, ♀ ♀, juv.) from India, presented by H.H. the Gaekwar of Baroda; a Wild Cat (*Felis catus*), a Common Genet (*Genetta vulgaris*), two Avocets (*Recurvirostra avocetta*), two Eyed Lizards (*Lacerta ocellatus*), seven Green Lizards (*Lacerta viridis*), European, three Prairie Marmots (*Cynomys ludovicianus*), a Cat Bird (*Galeoscoptes carolinensis*) from North America, a Sulphury Tyrant (*Pitangus sulphuratus*) from South America, a Grey Coly Shrike (*Hypocolius ampelinus*) from Scinde, two Greater Black-backed Gulls (*Larus marinus*), a Herring Gull (*Larus argentatus*), a Black-headed Gull (*Larus ridibundus*), British, presented by the Lord Lilford; two Grey Francolins (*Francolinus ponticerianus*) from India, presented by Lieut.-Colonel D. K. Robertson; a Loggerhead Turtle (*Thalossochelys caouana*) from Spain, presented by Miss A. Steer; five Spotted Salamanders (*Salamandra maculosa*), European, presented by Miss Minks; a Yellow-cheeked Lemur (*Lemur xanthomystax*) from Madagascar, a Moorish Tortoise (*Testudo mauritanica*) from North Africa, deposited; two Nylghaies (*Boselaphus tragocamelus*, ♂ ♀) from India, received in exchange.

OUR ASTRONOMICAL COLUMN.

TELEGRAMS ABOUT COMETS.—At the meeting of the Telegramm-Commission at Bamberg on September 18 last, it was decided to make an alteration in the scheme of cypher that has been in use up to the present time. It has now been settled that the *date of observation* and the *brightness* of the object shall be included in a group of five figures, and allowed for in the "control" figures, which are always added as a check.

To prevent mistakes the following example is added—

"Comet Witt D.A. 09120 October 13000 Berlin, Urania. 02554, 07630, 35946, 35957, 04207."

This reads when deciphered—

"New Comet Witt 1896 D.A. 9 October, 13h. mean time Berlin, Urania. Apparent R.A. = 25° 54′. Apparent N.P.D. 76° 30′. Daily movement −14′, −3′. Magnitude 12m."